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antarctic regions during January and February 1902, and in November and December of the same year. The South Shetland Islands and Graham Land (Louis Phillippe Peninsula, the Palmer Archipelago, Ross Island, and Snow Hill Island) were visited. The purpose of the paper is to give a short description of the meteorological and hydrographical conditions which rule the antarctic marine flora, a general survey of its appearance, and a rough sketch of its systematic composition. A list of 35 species of antarctic algae is furnished. According to the author, "the general character of the flora of the Graham region discloses . . . several interesting, probably ancient, endemic types, and a large percentage of subantarctic, especially magellanian, species. Nothing favors the so-called bipolar forms."—JOSEPHINE E. TILDEN.

Morphology of *Cephalotaxus drupacea*.—It is interesting to compare the results of the study of *Cephalotaxus Fortunei* by COKER²¹ with the results obtained by LAWSON²² in a study of *C. drupacea* and published almost simultaneously. The two accounts are so nearly identical in the main features, that one may have a feeling of confidence that our knowledge of the structures described in these papers is well established for the genus. *Cephalotaxus* has been a genus of special interest on account of its supposed primitive character, emphasized in recent years by the study of its vascular anatomy. The studies of the reproductive structures seem to contradict this claim to a certain extent, as have all recent similar studies of other Taxineae.

The main results of LAWSON's study of *C. drupacea* may be summarized as follows: In the germination of the microspore no prothallial cell is cut off, and before pollination the generative and tube nuclei have been organized. Pollination occurs late in March, but no further nuclear divisions take place until the following spring, when the pollen tube begins to penetrate the nucellus and the generative nucleus divides. When the tube has reached the archegonial chamber, which takes about ten days, the nucleus of the body cell divides, forming two sperm nuclei of equal size, but with no wall-formation. The female gametophyte develops in the usual way, with free nuclear divisions, vacuolation and the parietal placing of the free nuclei, wall-formation, and centripetal growth. Four archegonia are organized, each with a distinct chamber, and with two or frequently three neck cells. A ventral canal nucleus is cut off and degenerates before fertilization. In fertilization the entire contents of the pollen tube are discharged into the egg, but the two sperm nuclei are not released from the membrane of the body cell until the interior of the archegonium is reached. The fusion nucleus gives rise to four free nuclei near the center of the egg, which pass toward the bottom, accompanied by the various food materials, where divisions continue until sixteen free nuclei are formed, when the first walls appear. Finally four

²¹ COKER, W. C., Fertilization and embryogeny in *Cephalotaxus Fortunei*. BOT. GAZETTE 43:1-10. *pl. 1. figs. 5.* 1907.

²² LAWSON, A. A., The gametophytes, fertilization, and embryo of *Cephalotaxus drupacea*. Annals of Botany 21:1-23. *pls. 1-4.* 1907.

tiers of walled cells are organized, the uppermost being the "rosette," the next developing the suspensor, the third forming the embryo, and the terminal one developing the "penetrating cap" characteristic of the genus. The embryo may reach the 16- or 32-celled stage before the suspensor begins to elongate. After the full development of the suspensor a series of long "embryonal tubes" arise from the proximal cells of the embryo. An interesting observation is the budding out of small secondary embryos from the main group of embryo cells, though ordinarily but a single embryo is produced by the fertilized egg.—J. M. C.

Coastal plain of Georgia.—Concerning none of the older settled portions of the United States has there been so much difficulty in obtaining accurate information on plant distribution as for the extreme southeastern coastal plain. Because of its recent origin as a land area, its proximity to one of the most ancient land masses, and its connection with the tropics by way of the Florida peninsula, it forms one of the most critical regions on the continent for the investigation of plant origin, migration, and acclimatization. R. M. HARPER²³ has recently published the results of his investigations in southern Georgia and has made an important contribution to North American phytogeography. The classification of his observations, the clearness with which the results are presented, and the excellence of the illustrations add much to the value of the paper.

The first part of the volume is devoted to a brief summary of the geological divisions of eastern North America and the subdivisions of the Georgia coastal plain. The Altamaha Grit forms a strongly marked physiographic region. It is probably Pliocene in age, occupies the middle third of the coastal plain of Georgia, and its topography is typically rolling. Rock outcrops are rare, the soil being formed mostly by the overlying LaFayette (sand and clay) and Columbia (sand) formations. The vegetation is discussed under nineteen "habitat groups," among which are rock outcrops, dry pine-barrens, moist pine-barrens, swamps, cypress ponds, sand hills, and hammocks. In each case the plant list is most carefully analyzed and shows at a glance the trees, shrubs, vascular and non-vascular herbs, their relative abundance, duration, flower color, and evergreen or deciduous habit. Each list is accompanied by a phenological diagram exhibiting the times of flowering. The accompanying descriptions give the characteristics of the habitat, ecological notes, geographic ranges of the plants, and their taxonomic relationships. In the final summary the relations of the typical habitat groups to each other and to other regions are represented by diagrams; some exceptional habitats are described, the weeds are listed, and the effects of civilization discussed.

The second part of the paper presents a history of botanical exploration in the region, an annotated catalogue of the species, a summary of the catalogue, and a list of the papers consulted.—E. N. TRANSEAU.

²³ HARPER, ROLAND M., A phytogeographical sketch of the Altamaha Grit region of the coastal plain of Georgia. *Annals N. Y. Acad. Sci.* 171: 1-415. *pls.* 1-28. 1906.